

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 03283572  
PUBLICATION DATE : 13-12-91

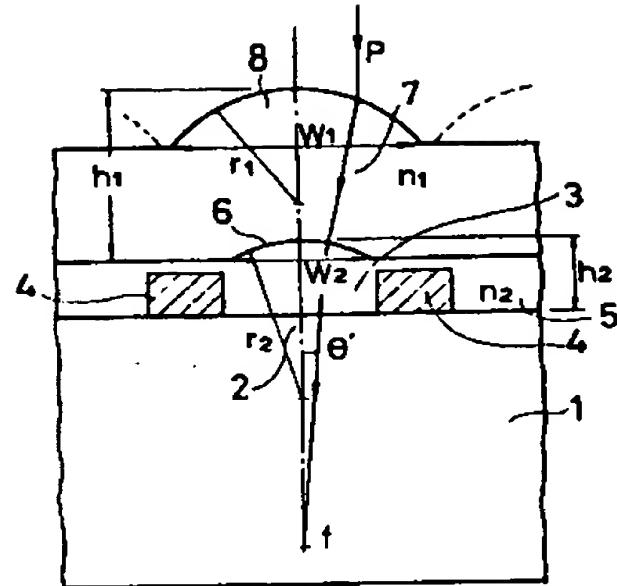
APPLICATION DATE : 30-03-90  
APPLICATION NUMBER : 02083788

APPLICANT : SONY CORP;

INVENTOR : YAMAGISHI NOBUHISA;

INT.CL. : H01L 27/14 G02B 3/00 H04N 5/225  
H04N 5/335

TITLE : SOLID-STATE IMAGE PICK UP  
ELEMENT



ABSTRACT : PURPOSE: To attain stable light collection by providing a multiple lens structure which has a first lens which has an aperture larger in the area than a sensor opening for collecting light and a second lens which deflects beams collected by the first lens to the direction vertical to a chip.

CONSTITUTION: Since a lens 8 has an aperture  $W_1$  which is larger than a sensor opening 4 in the area, light collecting quantity can be increased. And since the beams are bent to the vertical direction by a lens 6, a structure becomes strong against designing deviation caused by process troubles, irregular reflection at an unopened part, etc., of the sensor is suppressed and the area of the sensor 2 is most effectively used. Even when the thickness of an electrode layer 4 is increased owing to the incident light which is intense in the vertical direction and that causes the multi-layer structure of the electrode, the element operates satisfactorily.

COPYRIGHT: (C)1991,JPO&Japio